

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 September 2001 (20.09.2001)

PCT

(10) International Publication Number
WO 01/068103 A3

- (51) International Patent Classification⁷: A61K 31/711, A61P 31/12, C07H 21/00 (74) Agents: ZACHOW, Karen, R. et al.; Morrison & Foerster LLP, 755 Page Mill Road, Palo Alto, CA 94304-1018 (US).
- (21) International Application Number: PCT/US01/07841 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date: 12 March 2001 (12.03.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/188,556 10 March 2000 (10.03.2000) US
09/802,518 9 March 2001 (09.03.2001) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US Not furnished (CIP)
Filed on 9 March 2001 (09.03.2001)
- (71) Applicant (*for all designated States except US*): DY-NAVAX TECHNOLOGIES CORPORATION [US/US]; Suite 100, 717 Potter Street, Berkeley, CA 94710 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): VAN NEST, Gary [US/US]; 639 Skyline Dr., Martinez, CA 94553 (US).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 8 August 2002
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

WO 01/068103 A3

(54) Title: TREATMENT OF HERPES INFECTION USING IMMUNOMODULATORY POLYNUCLEOTIDE SEQUENCES

(57) Abstract: The invention provides new methods of preventing and/or treating herpes virus infections, particularly reducing infection, one or more symptoms and recurrence of one or more symptoms of herpes simplex virus infection. A polynucleotide comprising an immunostimulatory sequence (an "ISS") is administered to an individual which is at risk of being exposed to *alpha-herpesvirinae*, has been exposed to *alpha-herpesvirinae* or is infected with *alpha-herpesvirinae*. The ISS is administered without any *alpha-herpesvirinae* antigens. Administration of the ISS results in reduced incidence, recurrence, and severity of one or more symptoms of *alpha-herpesvirinae* infection.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/07841

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K31/711 A61P31/12 C07H21/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K A61P C07H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, SEQUENCE SEARCH, MEDLINE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 98 55495 A (DYNAVAX TECHNOLOGIES CORP ;DINA DINO (US); ROMAN MARK (US); SCHWAR) 10 December 1998 (1998-12-10)</p> <p>cited in the application SEQ ID n 2 example 1 claims 1-5,64-66</p> <p>---</p> <p>-/--</p>	<p>1-5, 7-14, 16-24, 26-33,35</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

10 June 2002

Date of mailing of the international search report

18/06/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Didelon, F

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/US 01/07841

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>MARTIN-OROZCO E ET AL: "ENHANCEMENT OF ANTIGEN-PRESENTING CELL SURFACE MOLECULES INVOLVED IN COGNATE INTERACTIONS BY IMMUNOSTIMULATORY DNA SEQUENCES" INTERNATIONAL IMMUNOLOGY, OXFORD UNIVERSITY PRESS, GB, vol. 11, no. 7, 1999, pages 1111-1118, XP000938271 ISSN: 0953-8178 cited in the application abstract Sequence of ISS-ODN page 1112, column 1, paragraph 2 Results page 1117, column 2, line 2 - line 7 ---</p>	1-5, 7-14, 16-24, 26-33,35
X	<p>WO 99 51259 A (UNIV IOWA RES FOUND) 14 October 1999 (1999-10-14) cited in the application claims 1-4,10 page 12, line 27 -page 13, line 29 seq ID n 3, 24, 49, 70, 76, 100, 103 ---</p>	1-4, 7-13, 16-23, 26-32,35
X	<p>US 5 616 461 A (SCHAFFER PRISCILLA A ET AL) 1 April 1997 (1997-04-01) Sequence ID n 18 figure 7 column 16, line 25 - line 59 ---</p>	1-4, 7-13, 16-23, 26-32,35
X	<p>WO 98 52581 A (WU TONG ;DAVIS HEATHER L (CA); OTTAWA CIVIC HOSPITAL LOEB RES (CA)) 26 November 1998 (1998-11-26) claims 30,49,55 page 23, line 1,2,15,16 Sequence ID n 2 ---</p>	1-4, 7-13, 16-23, 26-32,35
A	<p>ROMAN MARK ET AL: "Immunostimulatory DNA sequences function as T helper-1-promoting adjuvants" NATURE MEDICINE, NATURE PUBLISHING, CO, US, vol. 3, no. 8, August 1997 (1997-08), pages 849-854, XP002188113 ISSN: 1078-8956 cited in the application abstract page 850, column 1, paragraph 2 methods figures 2,3 -----</p>	1-35

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 01 07841

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: all partially

Present claims 1-35 relate to an extremely large number of possible polynucleotidic sequences comprising the motifs mentioned in said claims. In particular claims 1 and 2 are so broad that it is impossible to cover all the sequences comprising such minimal motifs. Support and disclosure is to be found, however, for only a very small proportion of the compounds claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, and in particular limited to polynucleotidic sequences comprising the minimal motif RRCGYCG or RRCGYCC as in claim 3.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/07841

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9855495	A	10-12-1998	AU 7811398 A	21-12-1998
			AU 7817898 A	21-12-1998
			EP 1003850 A1	31-05-2000
			EP 0986572 A2	22-03-2000
			JP 2002505580 T	19-02-2002
			US 6225292 B1	01-05-2001
			WO 9855609 A1	10-12-1998
			WO 9855495 A2	10-12-1998
WO 9951259	A	14-10-1999	AU 3467899 A	25-10-1999
			CA 2323929 A1	14-10-1999
			EP 1067956 A2	17-01-2001
			JP 2002510644 T	09-04-2002
			WO 9951259 A2	14-10-1999
			US 6218371 B1	17-04-2001
US 5616461	A	01-04-1997	NONE	
WO 9852581	A	26-11-1998	AU 7690898 A	11-12-1998
			CA 2301575 A1	26-11-1998
			EP 1003531 A1	31-05-2000
			US 6339068 B1	15-01-2002
			WO 9852581 A1	26-11-1998